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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/118,080	07/17/98	FARNWORTH W	M4065.067/P0

MMC1/0814

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EXAMINER	
CHAMBLISS,A	
ART UNIT	**PAPER NUMBER**
2814	

DATE MAILED: 08/14/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary	Application No. 09/118,080	Applicant(s) FARNWORTH, WARREN M.	
	Examiner Alonzo Chambliss	Art Unit 2814	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 July 2001* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-18 and 31-33* is/are pending in the application.

4a) Of the above claim(s) *8* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-7,9-18 and 31-33* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 7/27/01 has been entered.

Response to Arguments

2. Applicant's arguments with respect to claims 1-7, 9-18, and 31-33 have been considered but are moot in view of the new ground(s) of rejection.

Schrock discloses an epoxy adhesive that cures at a temperature below 150 degrees.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1-7, 9-18, and 31-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Heo et al. (U.S. 5,858,815) and Schrock (U.S. 6,221,691) in view of Khandros et al. (U.S. 5,148,265).

With respect to Claims 1, 13, and 31, Heo discloses a semiconductor chip 11, a dielectric layer 21 (i.e. a non-conductive film), an electrically conductive leads 26 on the dielectric layer 21, and a low temperature curing adhesive material between the semiconductor chip 11 and the dielectric layer 21 (see Fig. 4B). Heo fails to disclose a curing adhesive material (i.e. epoxy) that cures without exceeding 150 degrees Fahrenheit. However, with respect to Claims 1, 13, and 31, Schrock discloses a curing adhesive material (i.e. epoxy) 34 that cures without exceeding 150 degrees Fahrenheit (see col. 4 lines 58-67). Therefore, it would have been obvious to use the epoxy adhesive taught by Schrock with the semiconductor package taught by Heo to decrease the time needed to attach the dielectric material to the semiconductor chip.

Heo-Schrock fail to disclose a single dielectric layer. However, Khandros discloses a single dielectric layer 538. Furthermore, Khandros discloses that more than one dielectric layer can be used to separate leads and central terminals (see col. 18 lines 17-36). Therefore, it would have obvious to use a single dielectric layer as taught by Khandros with the semiconductor package taught by Heo-Schrock, since a single or double dielectric layer can be used to separate the leads and terminal from one another to prevent contact, as shown by Khandros. The adhesive material has a low temperature since it comprises an epoxy adhesive (see col. 5 lines 18-20). It is well known in the semiconductor industry that epoxy adhesive have anisotropically

conductive characteristics (see Tsukagoshi et al. U.S. 5,001,542 col. 3 lines 32-35 and col. 6 lines 18-35).

With respect to Claims 2 and 14, Heo discloses a dielectric layer 21 that is made of polyimide (see col. 5 lines 11 and 12).

With respect to Claims 3 and 15, it is well known in the semiconductor industry that benzocylobutene and polyimide are low K dielectric materials and can be substitute for one another (see Chang et al. U.S. 5,559,055 col. 4 lines 55-67, col. 6 lines 66 and 67, and col. 7 lines 1-3).

With respect to Claim 4, Heo discloses bond wires 40 connect the semiconductor chip 11 to the electrically conductive leads 26 (see Fig. 4B).

With respect to Claims 5, 17, 18, and 32, Heo discloses a resin material 50 that encapsulates the bond wires 40 (see col. 6 lines 60-64;Fig. 6B). The slot-shaped opening 23 is defined in the dielectric layer 21, wherein the bond wires 40 and the resin material 50 are located in the opening 23.

With respect to Claims 7, 12, and 33, Heo discloses a ball grid array 60 that is on the leads 26 (see Fig. 4B).

With respect to Claims 9 and 16, Heo discloses a tape 21 includes a dielectric layer (i.e. polyimide) and electrically conductive leads 26, wherein the leads 26 are on the dielectric layer.

With respect to Claim 10, Heo discloses an integrated circuits 11 that are formed in the semiconductor material. The tape 26 has openings 23 aligned with the integrated circuits 11, wherein bond wires 40 extend through the openings 23 are electrically

connected to the integrated circuits 11. The adhesive material 30 is between the tape 21 and the integrated circuits 11 (see Fig. 4B). Applicant simple recites that " an adhesive material cures at room temperature" which means any material having a composition that would allow curing to take place at room temperature. Therefore, one skilled in the art would readily known that the epoxy adhesive material 21 taught by Heo would cure at room temperature based on the composition of the epoxy adhesive.

With respect to Claim 11, Heo discloses a glob top encapsulant material 50 that is in the opening 23 (see Fig. 6B).

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. It is cited primarily to show the product of the instant invention.

Any inquiry concerning the communication or earlier communications from the examiner should be directed to Alonzo Chambliss whose telephone number is (703) 306-9143. The fax phone number for this Group is (703) 308-7722 or 7724.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-7956.

Olik Chaudhuri
Supervisory Patent Examiner
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AC

AC/August 9, 2001